

REMARKS

Claims 1-9 are currently pending in U.S. Serial No. 10/593,001. Claims 2 and 3 have been cancelled without prejudice or disclaimer. Claims 1 and 4-9 have been amended by the present Response. Support for these amendments may be found in the Application as originally filed, thus, no new matter has been added. In view of the amendments and remarks set forth in this Response, Applicants respectfully request reconsideration and the issuance of a formal Notice of Allowance directed to claims 1 and 4-9.

Election/Restrictions

Applicants acknowledge that Applicants' arguments made in traversal of the election requirement issued by the Office on September 2, 2011 were found persuasive and that the election requirement has been withdrawn.

35 U.S.C. § 112

Claims 1-9 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicants have amended claims 1 and 4-9 in the present response, Applicants respectfully request that this rejection be withdrawn.

35 U.S.C. § 102

Brannfors et al.

Claims 1, and 2-7 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. 3,224,203 to Brannfors et al. ("Brannfors"). Applicants respectfully traverse these rejections for at least the following reasons.

Contrary to the allegations in the Office Action, at page 3, Brannfors does not disclose the claim 1 features of "a first control device with which the movements of the spray lance b) can be directed via joints e), f) and g), and a second control device l) with which the

movements of the spray nozzle a) can be directed via the joints h) and i)”. Additionally, Brannfors does not anticipate the amended claim 1 features of “the first control device and the second control device can in each case be operated manually, without computer assistance, with the aid of two joysticks, one joystick belonging exclusively to the first control device and the other joystick belonging exclusively to the second control device” or “the first control device k) is computer-operated and the second control device l) can each be operated manually, without computer assistance, with the aid of a joystick”.

The cited reference speaks only in a very general way of operating and controlling a device by known hydraulic means and levers. Brannfors does not provide details for the control functions and further asserts that no additional description of the control functions is required. *See Brannfors at Column 3, lines 71-73*. Therefore, Brannfors does not offer a favorable solution for controlling several specified joints utilizing a first control device and controlling further joints with a second control device.

By contrast, and as noted above, Brannfors discloses only a very generic, nonspecific means of hydraulic control. Those means being “so well known they do not require any further description”. *Brannfors at Column 3, lines 69-70*. Therefore, Brannfors, by its own admission, discloses nothing new with regard to the control function of the device.

With regard to the amended claim 1 feature of “the first control device k) is computer-operated”, the Office alleges, at page 4, that Brannfors “has to have some sort of computer”. Thus, the Office puts forth a conclusory statement, but provides no line of reasoning whatsoever, in alleging that Brannfors teaches a computer-operated control device. Reasons for the rejection were not presented in the Office Action, thus, Applicants cannot reasonably determine which feature of Brannfors the Office alleges to correspond with a computer-operated first control device.

Moreover, Applicants submit that the Brannfors application was filed in the early 1960’s. One skilled in the art would recognize that in the 1960’s, computers were not commonplace. Early computers utilized vacuum tubes, occupied a significant amount of space and were very

costly. Brannfors makes no provision for a computer of any sort, much less a computer that, at the time of the Brannfors invention, would have been physically large and extremely expensive. Therefore, Brannfors does not disclose the claim 1 features of a first control device and a second control device operated manually, without computer assistance, or wherein a first control device is computer operated and a second control device can be operated manually without computer assistance, with the aid of a joystick. Therefore, Brannfors does not anticipate presently amended claim 1.

Further, Brannfors does not solve the problem of providing an economical, easily controlled device that ensures a uniform application of sprayed concrete with minimal loss or waste of material. Therefore, the generic hydraulics and levers of Brannfors do not anticipate the special arrangement of independent control devices, joints, joysticks and/or computer assisted control of the present claim 1 as amended. Therefore, Applicants respectfully request that the 35 U.S.C. §102 rejection of claim 1 be withdrawn.

Brannfors does not anticipate presently amended claim 1 for the reasons discussed above. As claims 4-7 depend on claim 1 and include its features, Applicants submit that claims 4-7 are also not anticipated by Brannfors. Therefore, Applicants respectfully request that the 35 U.S.C. §102 rejection of claims 4-7 over Brannfors be withdrawn.

Relyea

Claims 1-7 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. 5,788,158 to Relyea ("Relyea"). Applicants respectfully traverse these rejections for at least the following reasons.

As a threshold matter, the entire concept, design and implementation of the Relyea system is vastly different from the present system and method. Relyea discloses an automatic leveling device for a fluid nozzle pivotally mounted at the outer end of an aerial boom such that, irrespective of the vertical position of the boom, the nozzle will remain in a horizontal plane. For example, the Relyea system is designed to "provide an improved fire-fighting

system by automatically maintaining a fluid nozzle in the horizontal plane". *Relyea at Column 2, lines 24-26*. Relyea is concerned with providing a nozzle that automatically maintains a level, or horizontal, position so as to produce a forward reaching stream of fire retardant material during an approach to a fire. *See Relyea Column 1, line 66 to Column 2, line 2*.

By contrast, the presently claimed system and method is designed, in an embodiment, such that the axis of the concrete jet emerging from the spray nozzle is as perpendicular as possible to the inner surface of a tunnel section during spraying. *See Specification at paragraphs [0005], [0041]*. More specifically, the presently claimed system and method comprise a spray nozzle that operates at right angles to the inner surface of a tunnel section which ensures that the application is carried out uniformly and that the proportion of material bouncing back is relatively low. *See Specification at paragraph [0030]*.

Therefore, the arrangement of Relyea would frustrate the principle of operation of the presently claimed system since maintaining the spray nozzle in a horizontal position, as disclosed by Relyea, would not result in a uniform application of coating on the inner surface of a tunnel section and would result in a significant amount of waste caused by material bounce back. As such, the device of Relyea does not solve the problem of coating the inner surfaces of tunnels with sprayed concrete, applied uniformly and with little loss of material, because Relyea is concerned with solving a different problem.

With regard to claim 1, Relyea does not anticipate the features of the system as presently claimed. For example, the Office points to Relyea element 18 for the proposition that Relyea discloses the presently amended claim 1 feature of "c) a carrier, on which the spray lance is fixed". However, Relyea element 18 is the "lower beam 18 that is both rotationally and pivotally connected to the vehicle 12" *See Relyea at Column 3, lines 8-9*. Relyea does not disclose the claim 1 feature of a carrier according the present system which, in certain embodiments, the "entire spray lance is connected to" and is in turn "connected via feet to a mobile chassis" as shown in Figure 1. *See Specification at paragraph [0037]*. Therefore, Relyea does not disclose the presently amended claim 1 feature of "a carrier, on which the spray lance is fixed".

The Office alleges, at page 6, that the presently amended claim 1 feature of “a fourth joint via which the spray nozzle can be moved in rotation about the longitudinal axis of the segment of the spray lance that faces the spray nozzle” is disclosed by Relyea element 103. However, Relyea, at column 5, lines 34-35, discloses that the nozzle assembly may be “driven in a vertical plane as indicated by the arrow 103”. Therefore, Relyea element 103 is a directional arrow, indicated by Relyea Figure 6, and is not a fourth joint. Moreover, Relyea suggests two types of movement of the nozzle 1) vertical movement via gear 108 and 2) rotation in the horizontal plane about pivotal connection 122. *See Relyea at Column 5, lines 34-35, 41-42.* Neither of these movements are analogous to moving the spray lance in rotation about the longitudinal axis of the segment of the spray lance that faces the spray nozzle. By way of illustration, if the nozzle of Relyea were positioned, via gear 108, such that it had a vertical rather than horizontal orientation, movement of the nozzle via the pivotal connection 122 would cause the nozzle to rotate about its axis rather than in rotation about the longitudinal axis of the spray lance. Therefore, Relyea does not disclose the presently amended claim 1 feature of “a fourth joint via which the spray nozzle can be moved in rotation about the longitudinal axis of the segment of the spray lance that faces the spray nozzle”.

With regard to the amended claim 1 feature of “the first control device k) is computer-operated”, the Office alleges, at page 6, that Relyea “has to have some sort of computer”. Thus, the Office puts forth a conclusory statement, but provides no line of reasoning whatsoever, in alleging that Relyea teaches a computer-operated control device. Reasons for the rejection were not presented in the Office Action, thus, Applicants cannot reasonably determine which feature of Relyea the Office alleges to correspond with a computer-operated first control device.

Further, one skilled in the art would recognize that reference to a “computer” indicates a programmable, usually electronic, device that can store, retrieve, and process data. Relyea does not discuss or suggest using a computer to control a set of joints. Furthermore, there is no implicit reference to a computer since the Relyea control circuitry is clearly laid out as a simple

set of switches, relays and a sensor which do not constitute a computer. *See Relyea at Column 4, lines 7 to 21, Figure 5.* Therefore, Relyea does not disclose a computer within the meaning of the presently claimed system which, in an embodiment, can execute stored or pre-programmed movement sequences of the spray nozzle. *See Specification at paragraph [0042].* Relyea does not disclose the presently amended claim 1 feature of “a first control device is computer operated”. Therefore, Relyea does not anticipate presently amended claim 1.

Further, Relyea does not solve the problem of providing an economical, easily controlled device that ensures a uniform application of sprayed concrete with minimal loss or waste of material. Therefore, the automatic leveling device of Relyea does not anticipate the special arrangement of independent control devices, joints, joysticks and computer assisted control of the present claim 1. Applicants respectfully request that the 35 U.S.C. §102 rejection of claim 1 be withdrawn.

Relyea does not anticipate presently amended claim 1 for the reasons discussed above. As claims 4-7 ultimately depend on claim 1 and include its features, Applicants submit that claims 4-7 are also not anticipated by Relyea. Therefore, Applicants respectfully request that the 35 U.S.C. §102 rejection of claims 4-7 over Relyea be withdrawn.

Amberg et al.

Claims 1, and 3-9 have been rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. 5,851,580 to Amberg et al. (“Amberg”). Applicants respectfully traverse these rejections for at least the following reasons.

The Office relies on Amberg element 6 for the proposition that Amberg discloses the claim 1 feature of “a third joint via which the segment of the spray lance that faces the spray nozzle can be lengthened or shortened telescopically”. However, Amberg does not disclose or suggest that the spray lance 6 may be moved telescopically or that the spray lance 6 is capable of telescopic movement. Further, there is no indication in the Figures or the Description of Amberg, that the Amberg spray lance 6 is constructed of parts that slide one within another and

permit lengthening or shortening. Therefore, Amberg does not disclose the claim 1 feature of “a third joint via which the segment of the spray lance that faces the spray nozzle can be lengthened or shortened telescopically”.

The Office has erroneously equated the arrow 15, of Amberg Figure 3, with the “fifth joint via which the spray nozzle can be moved in such a way that the outlet opening of the spray nozzle can be brought close to or away from the longitudinal axis of the segment of the spray lance that faces the spray nozzle” of presently amended claim 1. Amberg arrow 15 illustrates the direction of the pivotal movement of the protective housing 12 with the measuring probe 8. *See Amberg at Column 5, lines 18-20.* Thus, arrow 15 refers to movement of the measuring probe, such that the measuring probe is brought parallel to the axis of the spray nozzle, and has nothing to do with controlling the movement of the spray nozzle. *See Amberg at Column 5, lines 21-24.* Moving a measuring probe, such that it is parallel to a spray head, is not the same as moving a spray head outlet opening closer to or further away from a spray lance. Amberg does not disclose the presently amended claim 1 feature of a fifth joint via which the spray nozzle can be moved in such a way that the outlet opening of the spray nozzle can be brought close to or away from the longitudinal axis of the segment of the spray lance that faces the spray nozzle.

Moreover, the construction of Amberg includes “the measuring probe 8 is firmly connected to the swivel head 7 by the protective housing 12, so that the measuring probe 8 and the spray nozzle 9 can be rotated together about the axis of the spray lance 6”. *See Amberg Column 4, lines 41-44.* The Amberg process includes a measuring phase during which the whole geometry of the tunnel section is measured, this being followed by a spray phase”. *Amberg Column 3, lines 4-7.* Amberg discloses that the measuring probe may utilize an infra-red laser beam or an ultrasonic scanner. *See Amberg Column 3, lines 1-3.* An automatic control system of this type necessitates complicated and expensive technology, such that the corresponding coating apparatus is complicated and therefore uneconomic.

By contrast, the presently claimed system is efficient and cost-effective. Amberg does not solve the problem of providing an economical, easily controlled device that ensures a uniform application of sprayed concrete with minimal loss or waste of material. Therefore, the spraying process of Amberg does not anticipate the presently claimed system.

Contrary to the allegations in the Office Action, at page 8, Amberg does not disclose the claim 1 features of “a first control device with which the movements of the spray lance b) can be directed via joints e), f) and g), and a second control device l) with which the movements of the spray nozzle a) can be directed via the joints h) and i)”. Additionally, Amberg does not anticipate the amended claim 1 features of “the first control device and the second control device can in each case be operated manually, without computer assistance, with the aid of two joysticks, one joystick belonging exclusively to the first control device and the other joystick belonging exclusively to the second control device” or “the first control device k) is computer-operated and the second control device l) can each be operated manually, without computer assistance, with the aid of a joystick”.

Amberg discloses a single control mechanism 10 which records measurements during a measuring phase and controls the subsequent spray operation depending on the measurements determined. *See Amberg at Column 4, lines 2-5.* During the Amberg spraying phase, the movement of the apparatus, via the support arm, spray lance and swivel head, is guided by the single control mechanism 10. *See Amberg at Column 6, lines 6-8.* Therefore, Amberg does not disclose the special arrangement of independent control devices, joints, joysticks and/or computer assisted control of the present claim 1. Therefore, Applicants respectfully request that the 35 U.S.C. §102 rejection of claim 1 be withdrawn.

Amberg does not anticipate presently amended claim 1 for the reasons discussed above. As claims 4-9 ultimately depend on claim 1 and include its features, Applicants submit that claims 4-9 are also not anticipated by Amberg. Therefore, Applicants respectfully request that the 35 U.S.C. §102 rejection of claims 4-9 over Amberg be withdrawn.

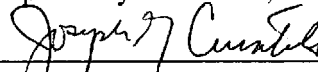
CONCLUSION

Applicants have addressed the instant rejections with respect to the independent claim in particular, and some of the dependent claims, and have distinguished the applied references as discussed above. It is therefore deemed unnecessary to address specific allegations of the Office Action regarding each dependent claim. Applicants therefore traverse these allegations, and do not concur with the same either explicitly or implicitly by not refuting each individually.

In view of the amendments and remarks set forth herein, Applicants respectfully request that the 35 U.S.C. § 112 and 35 U.S.C. § 102 rejections of the claims be withdrawn and that the Office issue a formal Notice of Allowability directed to claims 1 and 4-9.

Should the Examiner have any questions about this Response, the undersigned attorneys would welcome a telephone call.

Respectfully submitted,



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